Medical Dental Integration in Wisconsin: Integrating dental hygienists into pediatric well child visits and prenatal care

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ABSTRACT

Disparities exist in access to early oral health care, disproportionately impacting minority ethnic groups and populations with low socioeconomic status. Medical dental integration provides an opportunity to create a new dental access point for early prevention and intervention as well as care coordination. The Wisconsin Medical Dental Integration (WI-MDI) model expanded early access to preventive oral health services by integrating dental hygienists (DHs) into pediatric primary care and prenatal care teams to address oral health inequities with the goal of reducing dental disease. This case study will describe how DHs were incorporated into the medical care teams in Wisconsin and how legislation expanding scope of practice made this possible. Since 2019, five federally qualified health systems, one non-profit clinic, and two large health systems have enrolled in the WI-MDI project. Thirteen DHs have worked across nine clinics in the WI-MDI project and over 15,000 patient visits to a medical provider included oral health services provided by DHs from 2019 to 2023. Dental hygienists working in alternative practice models such as those demonstrated in the innovative WI-MDI approach are positioned to reduce oral health disparities through the provision of early and frequent dental prevention, intervention, and care coordination.

Keywords medical dental integration, dental hygienists, health disparities, oral disease prevention, access to care

NDHRA priority area **Population level: Access to care** (interventions).

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INTRODUCTION

Early access to preventative oral health care can improve maternal and child oral health outcomes, however, populations with low socioeconomic status and those from racial/ethnic minority groups often encounter barriers to receiving care.[1] Nationally, fewer than half of all pediatric patients enrolled in Medicaid in 2020 received preventative dental services.[2] Despite the importance of good oral health during pregnancy, many women do not receive adequate oral health care throughout pregnancy due to challenges in accessing providers willing to treat them and other social drivers that result in not seeking or receiving dental care.[3] Maternal oral health impacts child oral health and lack of preventative maternal and child oral health services predisposes these populations to dental disease.[4] Left untreated, dental disease can lead to pain, infection, emergency room visits, costly oral surgery and serious life-threatening events, as well as an overall decrease

in quality of life.[5] Medical dental interdisciplinary approaches provide an important opportunity to increase preventative oral health access to advance maternal and child oral health equity.

Many pregnant women and children with low socio-economic status who utilize Medicaid or who are uninsured encounter dental access challenges within the current oral health care system.[1,6] One challenge includes the insufficient number of dental providers to meet the population's needs, with only about one-third of dentists accepting Medicaid.[7] Workforce issues are also a challenge with a maldistribution of dental providers and limitations on the scope of practice of dental hygienists (DHs). Medical dental integration efforts have been noted as of one of most promising solutions for addressing these access needs.[1] Over the past two decades, there has been an increase in the number of models integrating medical and dental services through multidisciplinary approaches with the delivery of oral health care taking place outside of the dental office. Oral health assessments and fluoride varnish applications are being provided by primary care providers as part of their routine well child visit. Other multidisciplinary approaches leverage the timing, frequency and attendance of medical visits, in conjunction with the skill sets of a DH as a member of the primary care team, to reach patients earlier and more often with affordable dental preventive services. Benefits of these integrated approaches include expanding the number and type of patients who can obtain oral care, improving patient outcomes, and reducing the overall cost of care.[1]

The opportunity for Wisconsin DHs to work within the medical team was made possible due to years of legislative advocacy to expand settings that allow for direct access in the state beginning in 1999 when direct access became allowable in public and private schools, for dental and dental hygiene schools and for local public health departments. In 2006 DHs gained the ability to become certified Medicaid providers and with the passage of ACT 20 in 2017, which significantly expanded direct access to several new settings including medical offices, without the authorization and supervision of a dentist, and opened the way for DHs to be a part of MDI.[8] The Wisconsin Medical Dental Integration (WI-MDI) program began in 2019 with a goal to expand earlier access to preventative maternal and child oral health services through integrating DHs into pediatric and prenatal care teams to address oral health inequities. The WI-MDI program is collaboratively led by an executive team composed of dental and medical professionals from the Children's Health Alliance of Wisconsin and the Medical College of Wisconsin, with guidance from the WI-MDI Advisory Council. The Advisory Council is composed of health care organizations, professional health associations, and oral health stakeholders from across the state. The program received funding from Advancing a Healthier Wisconsin at the Medical College of Wisconsin and the Delta Dental of Wisconsin Foundation. This manuscript will discuss how DHs address oral health disparities through their incorporation into medical teams in Wisconsin, including their roles, benefits, and challenges.

PROGRAM IMPLEMENTATION

The WI-MDI model aims to expand access to dental services for children and pregnant women; improve oral health outcomes for these populations by reducing disparities; and create sustainable systems changes that are scalable across other Wisconsin communities. Initial implementation of the WI-MDI program occurred through a learning collaborative model approach designed to accelerate learning and best practice implementation among health care teams across the state. The Institute for Health Care Improvement (IHI) Breakthrough Series Model for improvement was utilized as the structural framework for the learning collaborative.[10] The first step in the Breakthrough Series Model is the development of a framework and change package. A change package, as described in the IHI Breakthrough Series model, is a vision for systems change in the topic area and when applied locally, will significantly improve the system's performance.

During the initial year of the WI-MDI program, experts of the WI-MDI Advisory Council and program staff developed a change package including a driver diagram and a measurement strategy. The change package was used to recruit healthcare systems to participate in the learning collaborative. In the

Breakthrough Series Model, three in-person learning sessions are held, with action periods between each learning period. The action periods allow for rapid cycle testing in the field through quality improvement methods. This process is designed to generate learning about what specific changes and in which specific context, produce overall program improvements.[10] Two in-person learning sessions were held in October of 2019 and March of 2020 prior to the COVID-19 pandemic. Each enrolled health system/center initially completed a readiness assessment to determine their organizational capacity and support for the WI-MDI model and to help guide coaching from program staff and the peer learning needs. Both process and outcome measures were monitored to gauge progress, impact, and sustainability.

In response to the COVID-19 pandemic, the implementation method pivoted from an in-person learning collaborative to virtual 1:1 learning and coaching with quality improvement strategies designed to support project adoption and implement-ation. The executive team also facilitated collaboration across health systems as they encountered steps in the implementation process that could benefit from cross system knowledge sharing. A platform for DHs in integrated roles to peer learn and collaborate across health systems was established through bimonthly peer learning calls.

ROLE OF THE DENTAL HYGIENIST

The WI-MDI model encourages DHs to be employed full-time as members of the medical team within a participating health system. In this approach, the integrated DH, equipped with a portable dental supply caddy (Figure 1), is able to move between exam rooms as part of the well visit workflow. During a typical visit, the DH completes a caries risk assessment, applies fluoride varnish and/or silver diamine fluoride as indicated, provides anticipatory guidance, and makes a referral to a dental home with care coordination support. The DH visit takes approximately 10 minutes. For clinics with high patient volumes the workflow has benefited from the addition of a dental assistant to support tasks such as scheduling, documentation, case management, etc.

Figure 1. Portable dental supply caddy

✓ Supply Checklist

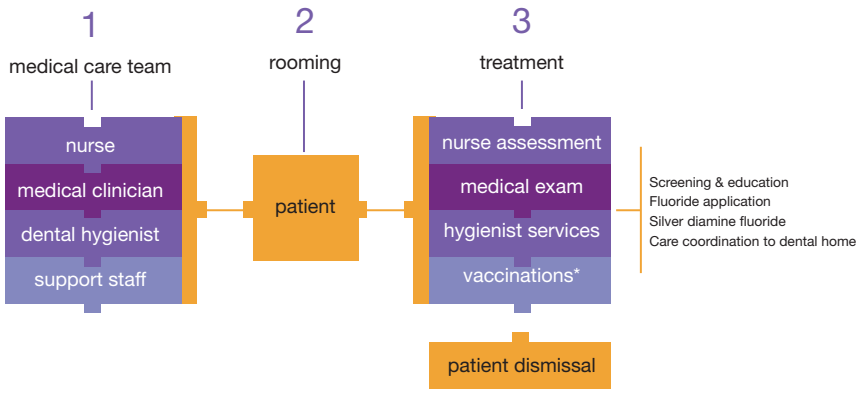
- ❑ Fluoride varnish and applicators
- ❑ Sterilization wipes/supplies
- ❑ Silver diamine fluoride, applicators, tray and consent forms
- ❑ Disposable mouth mirrors
- ❑ Supply caddy (pictured below)
- ❑ Gauze
- ❑ Homecare supplies (toothbrushes, floss, paste)
- ❑ Headlight/loupes (optional)
- ❑ Educational materials as needed
- ❑ Personal protective equipment

Within the WI-MDI model, DHs typically provide care after the medical provider's portion of the appointment and prior to immunizations, as needed (Figure 2). The exact timing of the ten-minute oral health portion of the appointment is flexible and can be adjusted based on the pace of the medical provider or the needs of the patient. The integrated DH workflow begins when the patient is scheduled for their medical visit and the DH reviews the schedule to determine eligibility for dental care; the process continues post appointment with care coordination efforts (Figure 3).

WI-MDI PROGRAM OUTCOMES

Since 2019, five federally qualified health care centers (FQHCs), one non-profit clinic, and two large health systems have enrolled in the WI-MDI program. Thirteen integrated DHs have worked across nine clinics from 2019 to 2023. Over that same time period, five of the original thirteen DHs have left their positions for a

Figure 2. Typical integrated dental hygienist's workflow



* Vaccinations may not occur depending on the appointment type

Figure 3. Typical integrated dental hygienist's work flow

variety of reasons. Four clinics began implementation with their pediatric patients and then expanded to their prenatal patients. Over 15,000 patient visits to a medical provider included oral health services provided by a DH in Wisconsin health systems and health centers from 2019 - 2023. Some challenges have been encountered in capturing process and outcome measures consistently across the range of health systems and centers due to COVID-19 data prioritization and limitations within certain electronic health record reporting capabilities. Efforts are being made to improve the efficiency and sustainability of data to capture the impact of medical dental integration efforts as a key component of continued growth and expansion of the WI-MDI model.

INTEGRATED DENTAL HYGIENISTS' PERSPECTIVES

In order to better understand the profile of DHs working in the WI-MDI, a questionnaire was distributed to integrated dental hygienists currently employed as members of medical care teams. The five DHs who completed the questionnaire were females ranging in age from 25-54 years with an average of 7.4 years of experience prior to beginning their integrated role. Previous work experience included general dental and pediatric practice settings, school-based settings and public health experience. Two of the respondents had a bachelor's degree, one has a master's degree, and additionally one has a certificate as a Community Dental Health Coordinator.

Dental hygienists were asked to write open-ended comments on why they decided to pursue an integrated position, what they enjoy most about their role, whether an integrated approach benefits patients and families, and the benefits of being an integrated dental hygienist. Five major themes emerged from the responses including: the opportunity for early intervention to prevent decay, help with establishing a dental home, caregiver education to build protective factors and mitigate risk factors, positive interactions

with medical providers and bidirectional learning, and mitigation of social barriers. Representative quotes are shown in Table I. Dental hygienists surveyed expressed their integrated role differs in several notable ways from traditional dental hygiene roles. The major differences noted by the participants were that the appointments included early and frequent anticipatory guidance, they are prevention focused and allow for early intervention when needed, the role involves an increase in autonomy and opportunity to collaborate with a multidisciplinary team, and that it is less physically demanding than providing full scope dental hygiene care.

Integrated DHs were asked about challenges they encounter in their role. A consistent theme expressed by all participants were limited referral options, establishing closed loop referral systems, and challenges with patients and families encountering barriers in obtaining recommended diagnostic and restorative dental care. Introducing the approach to dental care within the medical visit appointment was noted as a new concept for both providers and patients which required education and time to adapt. A quality improvement mindset, focused on how to effectively work collaboratively as part of a multidisciplinary team to best meet patients' needs was also articulated by the participants.

Patient stories are beginning to emerge regarding how having an integrated DH as part of the medical care team has positively impacted the health and wellbeing of their families. Stories have been gathered through the integrated DH questionnaire, peer learning calls, and coaching calls with medical teams implementing the WI-MDI model. One DH shared an impact story which highlights numerous benefits of the WI-MDI model for both the integrated team and the patients and families.

"One of my patients, a 12-year-old with a heart condition had complained of tooth pain for over a year. After my oral assessment I explained that the tooth had severe decay and that the infection was dangerous for the child's health. The mother explained that that they lacked access to affordable dental care. While the mother and patient continued their cardiology appointment, I made some phone calls to our dental referral sources and was able to get them scheduled for a dental appointment the following day. When I followed up with the family a week later, I found out that the tooth had been extracted and that the child had been cleared for heart surgery. The entire team played a role in this child's care."

DISCUSSION

The WI-MDI program has established the foundational systems change framework to support the integration of DHs into the primary care setting. This new and innovative dental access point allows communities to provide early prevention more effectively with long-term goals of addressing oral health disparities and reducing dental disease at the local level. Early adoption of the model has occurred across FQHCs but has recently expanded to include large health systems.

Cost benefit considerations played a key role in gaining the support of large health system leadership to implement the WI-MDI model outside of the federal programs. Medical-dental integration has the potential to result in cost-savings through investment in preventative services leading to decreased incidence of oral disease and decreased urgent care and costly emergency department (ED) visits. Dental care in the ED seldom resolves the issue, as 90% of dental-related emergency department visits result in prescription medication to manage pain and infection rather than the appropriate dental procedures.[11] Additionally, dental access to hospital operating rooms for surgical pediatric dental care is a growing challenge across the United States, with medical surgery procedures with higher reimbursement potential displacing dental cases.[12] With early prevention and timely intervention provided by a DH during a medical appointment, it is possible to reduce risk of oral disease, costs related to restorative care and emergency treatment secondary to infection.[13]

There are similarities and differences between the WI-MDI model and other medical-dental integration models in other states. Similar to other models utilizing integrated DHs there has been early adoption of this approach in FQHCs.[14] Additionally, some other MDI models also utilize a portable dental cart or caddy to efficiently move between exam rooms during primary

Table I. Selected quotes from integrated dental hygienists on the benefits of a MDI approach (n=5)

Theme	Quotes
Early intervention to prevent decay	*"While working in a public health school-based program I noticed the need for earlier prevention interventions. If preschool-aged children already had early childhood caries at their first dental visit, how could we help instill protective factors earlier. We know that children often visit their pediatrician 11 times before having their first dental visits, so this is where I wanted to start."*
	"Being able to break the chain at an early age before the decay starts. When children go to their first dentist appointment usually at age 3, most of their teeth are present so in some cases it is already too late, the decay is already present. By offering this education at an early age that would help prevent tooth pains which can affect a child's learning, sleeping, and eating".
Help with dental home access	*"…Access to care can be so difficult and as a parent most want to be sure their child is healthy. I can help them with that and direct them for treatment before there is pain or infection to worry about."*
	"It can be very challenging to access dental care, especially for patients on Medicare/Medicaid. Parents often get discouraged trying to access care and end up hoping their kids' teeth will just fall out. Going directly to the patients and setting up a visit, providing a loophole to the typical waitlists is very beneficial and a good way for us to provide full picture healthcare to at least our existing medical patients."
Caregiver education to build protective factors and mitigate risk factors	*"...I enjoy being able to share my passion and education about nutrition and home dental care. Knowing that my patient education can really change a child's dental experience…"*
	"I am given the time I need and can stagger the learning as they come more often to see the pediatricians. I am able to modify behaviors and monitor those changes every few months when they come for appointments".
Positive interactions with medical providers and bi-directional learning	*"…The providers I've worked with are happy to connect their patients to someone who can help them with their dental issues, as they have all encountered patients who complain of dental pain/concerns. Because of these relationships I have also been able to help my dental patients get help with some of their non-dental issues".*
	"The medical providers have been very excited to offer patients oral care options during their regular medical visits. Medical staff know that the integrated care team will be able to provide oral health guidance and care options previously unavailable to them".
Help mitigate social barriers	*"…It's especially helpful for patients and parents with language barriers to have someone come to discuss dental care when a translator is already present…"*
	"The demographic for community health centers may have a harder time with transportation, getting off work or school, getting babysitters, and I'm sure many other barriers so being able to offer important counseling, dental screenings and fluoride when they are in clinic is a huge benefit for families."

care medical visits to provide early prevention and intervention as well as supporting case management. Within the WI-MDI model, the DH is fully integrated as part of the medical team. Variance exists in the level of integration across other MDI models with some offering coordinated care, others being co-located, while others fully integrate a DH as part of the medical team.[15,16] Patient populations also varies for medical-dental integration models with some programs also including adult patients. Services provided by the integrated DHs also differ across the integration models, ranging from screenings to full scope of practice dental hygiene care. Health care systems exploring the possible implementation of innovative medical-dental integration approaches should first seek to understand what is allowable within their state dental practice act. This understanding, in conjunction with a knowledge of the community's dental needs and gaps in access, will determine which approaches, partnerships and resources can be be utilized to address local oral health disparities. In some scenarios, legislative changes may be needed to implement integrated approaches.

Limitations of the WI-MDI model include not every clinic being an ideal location and composition for integrated DHs. Providers, patient volume, and insurance mix, in addition to an understanding of the local dental needs, must be considered when determining which communities, health systems and centers, and locations will benefit from the model. The WI-MDI model was created to reach young children early and fill a dental care access gap due to the large number of children ages 0-5 years that visit a physician and not a dentist. It also helps to address the importance of oral health care during pregnancy through assessing oral health during prenatal visits, providing education and supporting dental access with care coordination. The program is still in its infancy but continues to grow and gain momentum. While it is not intended to be a replacement for a dental home the goal is to prevent early dental disease and increase access for young children and pregnant women already accessing the medical system yet not obtaining dental care.[2] It is also crucial to invest in relationships with the local dental providers to meet the dental needs that are identified during integrated visits. Advocacy efforts are also needed to increase the number of dental providers that provide oral care to patients enrolled in Medicaid.

CONCLUSION

Early access to oral health preventative services allows the opportunity for education, prevention, early intervention, and coordination to a dental home in vulnerable populations. Dental hygienists have the opportunity and skill set to reduce oral health disparities and advance health equity through innovative practice approaches as demonstrated by the WI-MDI model.

Medical dental integration models provide an innovative response to disparities in oral health access that exist within the current system. Merging dental and medical operations, knowledge, revenue cycle processes, and documentation of findings takes time and innovation. Studies are needed to evaluate cost benefit analyses of MDI models to support future sustainability. Further work is also needed to efficiently obtain oral population health data across all systems to evaluate the impact of MDI on oral health outcomes and oral health disparities.

DISCLOSURE

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